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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,609	03/25/2004	Jean Frederic Melchior	P08216US00/DEJ	5021
881	7590	11/10/2005	EXAMINER	
STITES & HARBISON PLLC 1199 NORTH FAIRFAX STREET SUITE 900 ALEXANDRIA, VA 22314			TRIEU, THAI BA	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/808,609	MELCHIOR, JEAN FREDERIC	
	<b>Examiner</b>	<b>Art Unit</b>	
	Thai-Ba Trieu	3748	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 July 2005 and 29 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>07/27/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office Action is in response to the Amendment filed on July 27, 2005; and the Supplemental Amendment filed on August 29, 2005. Applicant's cooperation in correcting the informalities in the abstract and specification is appreciated. Applicant's cooperation in amending the claims to overcome the claim objections relating to informalities as well as indefinite claim language is also appreciated.

Claims 11-50 were amended and claim 51 was newly added in the Amendment filed on July 27, 2005.

Additionally, claim 12 was further amended in the Supplemental Amendment filed on August 29, 2005.

### *Claim Suggestions*

Applicant is suggested to use the same terminology for an element to which applicant wants to reference to, in order to maintain the consistency of the whole specification and claims. For example:

1. In claim 1, line 9, applicant recites "constant volume of cooled air Vc";
2. In claim 1, line 11, applicant recites "volume Vc";
3. In claim 1, line 17, applicant recites "volume of air Vc"; and
4. In claim 1, line 20, applicant recites "volume Vc".

The suggestion is that applicant should use – **constant volume of cooled air Vc** – to disclose the "**Vc**" in lines 9, 11, 17, and 20, order to maintain the consistency of claim.

### ***Claim Objections***

Claim 1 is objected to because of the following informalities:

- In claim 1, line 14, ***“a”*** before ***“EGR”*** should be replaced by ***– an –*** (*for correcting grammatical error*).
- In claim 1, line 15, ***“an”*** before ***“exhaust gas manifold”*** should be replaced by ***-- the --*** (*for addressing double recitation in claim*).

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

1. In claim 1, line 10, the recitation of ***“without significant loss of pressure”*** renders the claim indefinite, since it is not clear that which level of the pressure loss is to be considered significant. Applicant is required to identify the significant level of the pressure loss.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (Patent Number EP 1 138 928 A2).***

Kim discloses a reciprocating engine used between a minimum speed of rotation  $N_{min}$  and a maximum speed  $N_{max}$ , comprising a turbocharging unit (18,20) which:

supplies the intake manifold (22) of the engine with air via a cooler (24)

(See Figures 1 and 3-4, and Paragraph [0013]);

is supplied with gas by the exhaust manifold (26) of the engine at the exhaust temperature (See Figures 1 and 3-4, and Paragraph [0013]);

has a turbine inlet pressure substantially equal to the compressor discharge pressure (See Paragraph [0014])

in such a way that at constant air temperature and with a fixed geometry, the turbocharging delivers a substantially constant volume of cooled air  $V_c$  when the compressor discharge pressure varies,

and that the volume  $V_c$  is substantially proportional to a turbine inlet section offered to hot gases,

wherein the turbine inlet pressure is maintained substantially equal to the compressor discharge pressure by an EGR bypass (28) provided between the intake manifold (22) and the exhaust manifold (26) dimensioned to transfer a flow of exhaust gas to the intake manifold without significant loss of pressure, and

wherein the volume of air  $V_c$  is less than the volume drawn in by the engine at the speed  $N_{max}$  such that a flow of hot gases is drawn in again by the engine via the EGR bypass (28) above a turbocharging adaptation speed  $N_a$ , where the volume drawn in is equal to  $V_c$ , and a flow of air is deflected towards the turbine below the adaptation speed  $N_a$  (See Paragraph [0014], lines 43-50; Paragraph [0018], and Paragraph [0019]);

wherein the EGR bypass (28) has an EGR valve (36) making to increase the turbine inlet pressure above the compressor discharge pressure (See Figure 1, Paragraph [0017], lines 1-4);

wherein the turbocharging unit has an intake valve (44) situated on a compressed air discharge conduit to increase the compressor pressure above the turbine inlet pressure (See Paragraphs [0018] and [0019]); and

wherein the EGR bypass (28) has a gas cooler (34) adjustable to cool gas up to a temperature close to that of the fresh air (See Figure 1).

***Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Coleman (Patent Number 6,205,785 B1).***

Coleman discloses a reciprocating engine used between a minimum speed of rotation  $N_{min}$  and a maximum speed  $N_{max}$ , comprising a turbocharging unit (24,56,46) which:

supplies the intake manifold (22) of the engine with air via a cooler (26) (See Figures 1-2);

is supplied with gas by the exhaust manifold (42a, 42b) of the engine at the exhaust temperature (See Figures 1-2);

has a turbine inlet pressure is substantially equal to the compressor discharge pressure (See Column 5, lines 12-17, Column 6, lines 55-56)

in such a way that at constant air temperature and with a fixed geometry, the turbocharging delivers a substantially constant volume of cooled air  $V_c$  when the compressor discharge pressure varies,

and that the volume  $V_c$  is substantially proportional to the turbine inlet section offered to the hot gases,

wherein the turbine inlet pressure is maintained substantially equal to the compressor discharge pressure by a EGR bypass (50) provided between the intake manifold (22) and the exhaust manifold (42a,42b) dimensioned to transfer a flow of exhaust gas to the intake manifold without significant loss of pressure, and

wherein the volume of air  $V_c$  is less than the volume drawn in by the engine at the speed  $N_{max}$  such that a flow of hot gases is drawn in again by the engine via the EGR bypass (50) above a turbocharging adaptation speed  $N_a$ , where the volume drawn in is equal to  $V_c$ , and a flow of air is deflected towards the turbine below the adaptation speed  $N_a$  (See Column 2, lines 4-16, and Column 6, lines 52-61);

wherein the EGR bypass (50) has an EGR valve (52a, 52b) to increase the turbine pressure above the compressor discharge pressure (See Column 5, lines 8-12).

### ***Allowable Subject Matter***

Claims 5-50 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed July 27 and August 29, 2005 have been fully considered but they are not persuasive. Accordingly, claims 1-50 are pending.

With regard to the applicant's arguments set forth on Pages 3-5, Paragraph 2, applicant states that the references to Kim (Patent Number EP 1 138 928 A2) and to Coleman (Patent Number 6,205,785 B1) do not describe nor suggest an engine comprising the combination of features (a) through (c):

(a) the turbine inlet pressure is maintained substantially equal to the compressor discharge pressure by an EGR bypass provided between an intake manifold and an exhaust manifold dimensioned to transfer a flow of exhaust gas to the intake manifold without significant loss of pressure;

(b) the volume of air  $V_c$  is less than the volume drawn in by the engine at the speed  $N_{max}$ ; and



(c) a flow of hot gases is drawn in again by the engine via the EGR bypass above a turbocharging adaptation speed  $N_a$ , where the volume drawn in is equal to volume  $V_c$ , and a flow of air is deflected towards the turbine below the adaptation speed  $N_a$ .

The examiner respectfully disagrees with the applicant because:

Firstly, applicant claims that "the turbine inlet pressure substantially equal to the compressor discharge pressure" means the pressure at the inlet turbine is almost equal, but not exactly equal to the pressure at the discharge compressor. In other words, the pressure at inlet turbine may be lower or higher than the pressure at the discharge compressor. And then, in the case, if the pressure at the inlet turbine is higher than the pressure at the discharge compressor, the exhaust gas flows from the turbine side to the compressor side.

The word "***substantially***" is defined being largely but not wholly that which is specified (Merriam Webster's Collegiate Dictionary 10<sup>th</sup> Edition).

Secondly, Kim discloses the inlet turbine pressure being lower than the compressor outlet pressure for enabling a flow of fresh air from the intake manifold towards the exhaust manifold (See Paragraph [0014]); and an EGR duct 28 extending between manifold 26 and manifold 22, and comprising a valve 36, a cooler 34 and a venturi 46 for enabling an acceleration of a flow of gases in manifold 22 so as to lower the pressure and enable a drawing of exhaust gases through duct 28 into intake manifold 22 (see paragraph [0019]). And then, in the condition as the inlet turbine

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pressure is higher than the compressor outlet pressure, a flow of exhaust gas enables to flow from the exhaust manifold towards the intake manifold?

Additionally, Coleman (Patent Number 6,205,785 B1) also discloses that when the exhaust manifold pressure is greater than the intake manifold pressure, the EGR valve opens and lets the exhaust gas flow from the exhaust manifold to the intake manifold (See Column 3, lines 12-17, Column 5, lines 8-12).

With the condition of the inlet turbine is higher than the pressure at the discharge compressor, the exhaust gas flows from the turbine side to the compressor side; which is inherently disclosed in this reference.

Thirdly, as an engine operates at maximum speed ( $N_{max}$ ), the volume of air/mixture air and gas at the intake manifold drawn the engine has to be increased; therefore, the volume of air/mixture air and gas at the intake manifold drawn the engine ultimately greater than the constant volume of the cooled air  $V_c$ .

Finally, the applicant's arguments set forth set on page 4, third paragraph, are far away from the limitations being claimed in the last paragraph of claim 1.

In the arguments, applicant states that the engine according to Claim 1, when operating below a rotation speed of the engine called the adaptation speed  $N_a$  which depends upon the turbocharging unit and the engine, has *the volume  $V_c$  of fresh air discharged at the compressor outlet higher than the volume  $V_m$  of gases drawn in by the engine*; and above the rotation speed  $N_a$ ,  $V_c$  is inferior to  $V_m$ .

However, in the original and amended claim 1, applicant claims (c) a flow of hot gases is drawn in again by the engine via the EGR bypass above a turbocharging

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adaptation speed  $N_a$ , where the volume drawn in is equal to volume  $V_c$ , and a flow of air is deflected towards the turbine below the adaptation speed  $N_a$ .

Therefore, it is not clear that under the same condition of operating below the adaptation speed  $N_a$ , the constant volume of the cooled air/fresh air discharged at the outlet of the compressor has two different values (higher than and equal to) the value of the volume of hot gases drawn by the engine. Applicant should clarify why the constant volume of the cooled air/fresh air discharged at the outlet of the compressor has two different values as operated under the same condition of operating below the adaptation speed  $N_a$ .

Additionally, the last paragraph of claim 1 should be revised and clarify all the limitations.

### ***Conclusion***

The IDS (PTO-1449) filed on July 27, 2005 has been considered. An initialized copy is attached hereto.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB  
April 25, 2005



Thai-Ba Trieu  
Primary Examiner  
Art Unit 3748